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The Intervening Effect of Planning Function of Management in the Relationship between International Procurement Practices and Supply Chain Performance of Energy Development Agencies in Kenya

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Abstract

During the procurement planning process, the procurement method is assigned and the expectations for fulfillment of procurement requirements determined. The planning function of management entails a set goals and targets that aim to transform and improve the image of the public service through quality delivery of services. This study sought to establish the intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya. Positivistic philosophy approach was adopted for the study. The study adopted a cross-sectional survey research design with an aim of collecting large number of quantitative data at a point in time to establish patterns of value addition in the Kenyan energy sector. The study's target population consisted of six energy development agencies in Kenya as outlined by the Ministry of energy (2018). The unit of analysis was the energy development agencies. The study purposely sampled only the top managers and middle managers since they are the key individuals handling the strategic issues within the departments. This study utilized primary data. Primary data was obtained using self-administered questionnaires. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS). The established a partial mediation effect on the mediating role of planning function of management on the relationship between international procurement practices and supply chain performance. The study thus rejected the null hypothesis and adopted

the alternative hypothesis that there is a significant intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya. The study concluded that there is a significant intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya. The study also found that from the responses, the agencies had adopted well laid out strategic plans that are well planned and management organizes all the required resources for optimal supply chain performance. The management had stipulated a clear vision, mission and strategic goals and is effective in directing the agency towards achieving its vision and mission. The study also recommended that measures should be put in place to ensure that only exact quantities of materials are procured and in a way that minimizes their overall cost of supply chain. Effective use of e-procurement technologies should be highly encouraged to achieve this. To improve the supply chain performance more, the study recommended that the supply chain managers should be holding regular supplier appraisals and meetings to know the areas of improvement on the part of the suppliers. Specific e-procurement implementation key performance indicators should also be defined and closely monitored since this will lead to improvement in supply chain performance.

Keywords: *Planning Function of Management, International Procurement Practices, Supply Chain Performance, Energy Development Agencies & Kenya.*

1.0 Introduction

1.1 Background of the Study

Rendon and Rendon (2015) define planning function of management in procurement as the process of deciding what to buy, when and from what source. During the procurement planning process the procurement method is assigned and the expectations for fulfillment of procurement requirements determined. Fox and Rink (2016) define planning function of management in procurement as the process of identifying and consolidating requirements and determining the timeframes for their procurement with the aim of having them as and when they are required. The Procurement Plan is the product of the procurement planning process. It can be developed for a particular requirement, a specific project, or for a number of requirements for one or many entities in the public or private sectors. A good procurement plan will describe the process in the identification and selection of suppliers/contractors/consultants.

The planning function of management entails a set goals and targets that aim to transform and improve the image of the public service through quality delivery of services. Devolution and planning objectives strengthen capacities for County Governments to perform their functions effectively (Institutional Reform in the New Constitution of Kenya, 2013). To achieve the goals of devolution, it is important for the implementers of devolution to have a strategic plan that acts as a guide on planning objectives and how each objective was to be achieved. Therefore, Counties are guided by specific objectives to achieve its planning goals.

These objectives must be clear about what was achieved, they must be measurable to quantify results and measure when they have been achieved, they must be achievable and realistic in order to be attained within project resources in a specified timescale. Planning function is aimed at providing the directions to the set plans in order to focus on the results (Republic of Kenya, 2013). In this study, planning function of management is deemed to be relevant in all the energy

development agencies under study as management practice in Kenya widely conforms to planning function, which is expected to influence the day to day running as well as the overall performance of the energy development agencies.

Supply chain performance refers to the extended supply chain's activities in meeting end-customer requirements, including product availability, on-time delivery, and all the necessary inventory and capacity in the supply chain to deliver that performance in a responsive manner (Lusch, 2011). Supply chain performance crosses company boundaries since it includes basic materials, components, subassemblies and finished products, and distribution through various channels to the end customer. There are 5 essential stages in developing a successful supply chain (Awino & Marendi, 2014). These include Plan stage: The Company must decide whether to manufacture a product or buy it. The second stage is source: The Company should select the source and once selected, contracts and schedule deliveries must be negotiated. Stage three is make: This is concerned with scheduling of production activities, testing of products and packaging. At this stage companies must also manage rules for performance, data that must be stored, facilities and regulatory compliance (Awino & Marendi, 2014). The forth step is delivery: The delivery stage encompasses all the steps from processing customer inquiries to selecting distribution strategies and transportation options. Companies must also manage warehousing and inventory or pay for a service provider to manage these tasks for them. The fifth and the final step is return: Return is associated with managing all returns of defective products, including identifying the product condition, authorizing returns, scheduling product shipments, replacing defective products and providing refunds (Caritas, Kule & Mbera, 2016).

Energy is one of the key enablers of the Vision 2030 and energy security remains a matter of national priority (MoEP, 2017). Under the fourth Schedule of the Constitution of Kenya 2010, the Ministry of Energy, on behalf of the National Government, is responsible for energy policy and regulation of electricity while County Governments are responsible for planning and development of electricity and regulation. The Energy Act of 2006 brought the regulations affecting all the energy sub-sectors under one umbrella body, which is the Energy Regulatory Commission (ERC). These energy agencies includes; Kenya Electricity Generating Company (KenGen), Kenya Power and Lighting Company (KPLC), Kenya Electricity Transmission Company (KETRACO), Geothermal Development Company Limited (GDC), Rural Electrification and Renewable Energy Corporation (REREC) and Nuclear Power and Energy Agency (NUPEA).

1.2 Statement of the Problem

As Kenya races towards an energy-sufficient future, driven by Kenya Vision 2030 and Government's 'Big Four' agenda set around housing, manufacturing, agriculture and health, there are many opportunities for energy agencies to help secure the country's economic future (Ministry of Energy Agencies, 2019). The energy agencies are facing serious challenges which include; inadequate power supply capacity due to rise in demand for electricity, which is growing faster than the ability to install additional generation plants, shortage of transformers and overstressed distribution network, long delays in development of power infrastructure because building of power generation, transmission and distribution network is capital intensive and takes inordinately long time from conception to commissioning (MEA, 2019). KenTrade (2016) reported that the performance of Kenya energy sector in terms of supply chain performance in the recent past has been below expectation and this has raised anxiety among the stakeholders. Moreover, Kenya has regularly experienced frequent breaks in the supply of energy products over the years despite the state spending about Kshs. 234 billion per year in the energy sector. As a result, energy

development agencies have registered a high number of complaints relating to blackouts, poor supply and delayed responses to emergency cases as well as repairs (KenTrade, 2016).

Various scholars have also undertaken studies relating to procurement practices and supply chain performance and they found mixed findings. Majority of the studies found a positive significant relationship (Okulo, 2015; Sengbeh, 2015; Caritas *et al.* 2016; Mrope, Namusonge & Iravo, 2017; Wei, Govindan, Li & Zhao, 2015 and Chen and Paulraj, 2014). Other studies find an insignificant relationship (Chokshi *et al*., 2015; Awino & Marendi-Getuno, 2014 and Anderson, 2011)

However, from the inconclusive findings the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya is therefore open to further enquiry as to whether other variables affect this relationship. This study sought to investigate the intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya.

1.3 Objective of the Study

To establish the intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya.

1.4 Hypotheses of the Study

Ho: There is no significant intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya.

2.0 Literature Review

2.1 Theoretical Framework

2.1.1 The Classical Management Theory

The classical management theory by Fayol (1841-1925) emphasizes how managers and supervisors relate to their organizations in the knowledge of its goals, the implementation of effective means to get goals accomplished and how to motivate employees to perform to the highest standard. The proponent devised a 14 point model management. According to Fayol (1841-1925), these specifications have proved popular in France. They include division of work, authority, discipline, unity of command, unity of direction, and subordination of individual interest to general interest, remuneration, centralization, scalar chain, order, and equity, stability of tenure of personnel, initiative and esprit de corps.

The criticism is that although Henri Fayol's principles of management were important in his day, the understanding of management has evolved significantly since that time. His principles of management might be somewhat valid today but they are very crude in today's environment. For example, in today's world, there is a much greater emphasis on "leadership" than on "management" in many areas. That is also much more consistent with a knowledge-worker environment. This theory is relevant to this study since it informs planning function of management variable. Managers needed specific roles in order to manage work and workers. This became known as the administrative school of management and was founded on the six functions,

or roles, of management: Forecasting, Planning, Organizing, Commanding, Coordinating and Controlling.

2.2 Empirical Review

Wei, Govindan, Li and Zhao (2015) looked into the relationship between supply chain performance and the effective management strategies. The study used inferential statistics and found that the relationship between management strategies and supply chain performance was most significant in the following management dimensions: strategic, operational and business performance. Findings further illustrated that supply chain integration dimensions for instance, customer, supplier and internal integration are more strongly related to improving supply chain performance than management strategies that generally overlooked supplier integration.

Chen and Paulraj (2014) also conduct the research regarding supply chain management practices; they investigated long-term relationship, cross-functional teams, supplier base reduction, and supplier involvement using regression analysis. The study analyzed over 400 articles and synthesize the large, fragmented body of work dispersed across many disciplines such as purchasing and supply, logistics and transportation, marketing, organizational dynamics, information management, strategic management, and operations management literature. The study's findings indicated that supply chain management practices in form of strategic supplier partnership, customer relationship, and information sharing are critical in managing supply chains effectively.

Knill (2010) undertook a study on the role of management in efficient global supply chains by adopting cross-sectional descriptive research survey of multinationals in OECD countries. From the study's findings, it was evident that for a supply chain to be managed properly and effectively, the intended distribution network is configured such that: the configuration involves the determination of the number of international warehouse facilities, transport facilities, clientele distribution, distribution centers and supplier network; distribution strategy of a supply chain must be monitored in such a way that the distribution strategy maps how an organization intends to distribute its goods and services to its clients effectively and efficiently using global distribution networks.

Procurement planning is one of the primary functions of procurement with a potential to contribute to the success of local government operations and improved service delivery. It is a function that sets in motion the entire acquisition/procurement process of local governments (Basheka, 2010).

Planning both as a concept and function is probably one of the extensively talked about concepts in the management literature. It is a function that forms the foundation for the rest of management functions. When planning is properly conceived and implemented, it can serve as an important mechanism for extracting, distributing and allocating resources (James, 2014). Planning generally enhances the gathering, evaluating and interpreting of essential data and information in order to produce knowledge relevant to good policy making. In many African countries, planning has not arrived at the level of achieving the aims described because of problems related to human and technical capacities and financial resources). In management literature planning implies that managers think through their goals and actions in advance and that their actions are based on some method, plan or logic rather than on a hunch (Stoner, Freeman & Gilbert, 2015).

The planning function encompasses defining an organization's goals, establishing an overall strategy for achieving those goals, and developing a comprehensive hierarchy of plans to integrate

and coordinate the activities (Robbins, 2001). Procurement planning is the primary function that sets the stage for subsequent procurement activities. It 'fuels and then ignites' the engine of the procurement process. A mistake in procurement planning therefore has wide implications for local governance, measured from the two indicators of accountability and participation.

Procurement planning contributes to local governance measured at two levels of accountability and community participation. The key to accountability is the capacity to monitor and enforce rules-within the public sector, between public and private parties. Accountability as one of the broad elements of good governance involves holding elected or appointed individuals and organizations charged with public mandate to account for specific actions, activities, or decisions to the public from whom they derive their authority (Agere, 2017). The internal regulatory mechanisms of government-accounting, procurement and personnel –have long received sustained attention as the centerpiece of reforms to promote accountability (World Bank, 2017). Accountability of public officials is critical in deterring corrupt practices and it creates an enabling environment for vibrant private sector activity (Kabaj, 2013). Problems of accountability arise when government ignore or transgress social ethics and constitutional and legal provisions in conducting public affairs, administrative systems are fragmented, tasks to be performed are so complex or unspecified that it is difficult to identify who is responsible for what, activities are underfunded so that implementation is very difficult or impossible (Therkildsen, 2011).

Mamiro (2016), in his findings underscores these facts and concludes that one of the major setbacks in public procurement is poor procurement planning and management of the procurement process which include needs that are not well identified and estimated, unrealistic budgets and inadequacy of skills of procurement staff responsible for procurement. Similarly, Kakwezi and Nyeko (2016), argue that procurement performance is not usually measured in most Public entities as compared with the human resource and finance functions. They conclude in their findings that failure to establish performance of the procurement function can lead to irregular and biased decisions that have costly consequences to any public procuring entity. Procurement planning is the primary function that sets the stage for subsequent procurement activities; it fuels and then ignites the engine of the procurement process. It is the process of determining the procurement needs of an entity, their funding and timing of their acquisition such that operations are met as required in an efficient manner (Arrowsmith, 2013).

Procurement must take a thoroughly professional view of its role in business as a whole and that must include planning (Bailey, Farmer, Jessop & Jones, 2018). Any such procurement begins with the planning decision to make the purchase and this will involve in the first place, deciding whether there is a need for the particular goods or services, ensuring that the purchaser has the legal powers to undertake the transaction, obtaining any relevant approvals within the government hierarchy and arranging the necessary funding. Nyeko (2014), in his studies on procurement processes and performance: efficiency and effectiveness of the procurement function, however, argues that procurement performance is not usually measured in most PEs as compared with the human resource and finance functions. He asserts that failure to establish performance of the procurement function can lead to irregular and biased decisions that have costly consequences to any public procuring entity.

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2.3 Conceptual Framework

The study's conceptual framework is conceptualized by planning function of management was used as an intervening variable. The dependent variable is supply chain performance. The study's conceptual framework is illustrated in Figure 1.

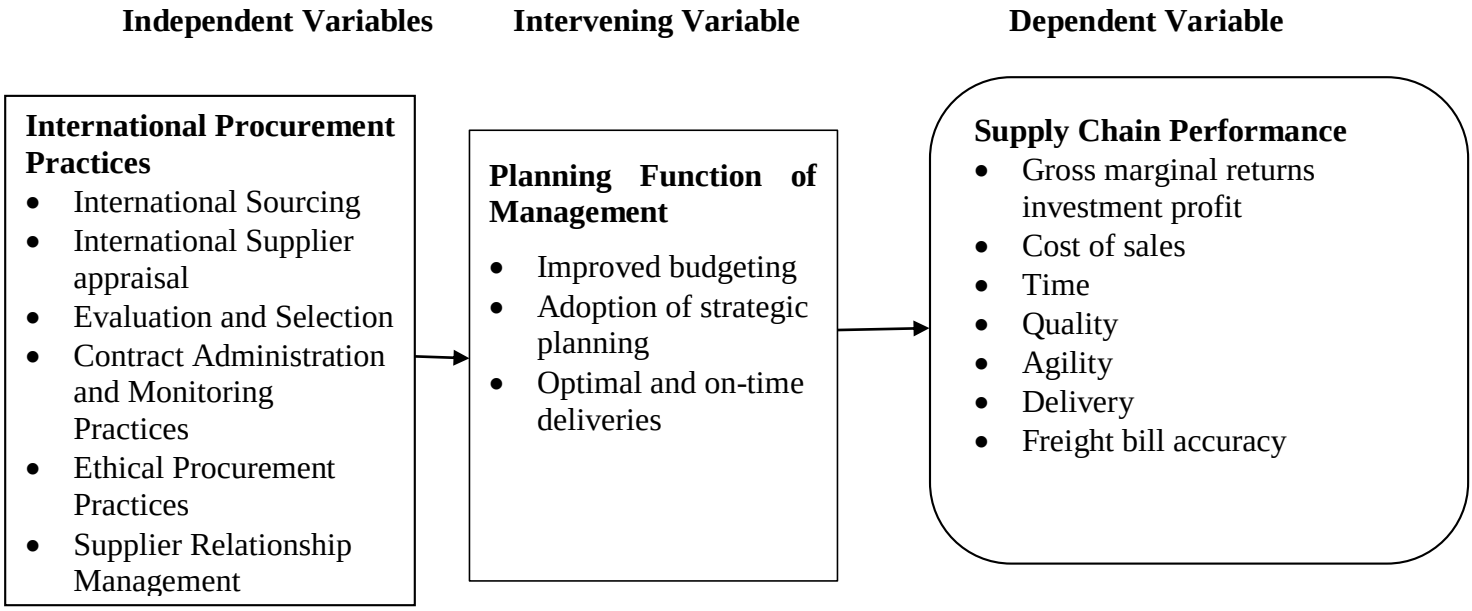

Figure 1: Conceptual Framework

3.0 Research Methodology

Positivistic philosophy approach was adopted for the study. The study adopted a cross-sectional survey research design with an aim of collecting large number of quantitative data at a point in time so as to establish patterns of value addition in the Kenyan energy sector. The study's target population consisted of six energy development agencies in Kenya as outlined by the Ministry of energy (2018). These agencies include: Rural Electrification and Renewable Energy Corporation (REREC), Geothermal Development Company (GDC), Kenya Electricity Transmission Company (KETRACO), Kenya Generation Company (KENGEN), Kenya Power and Lighting Company (KPLC) and Nuclear Power and Energy Agency (NUPEA). The justification for picking the 6 agencies is because they are energy sub-sectors under one umbrella body, which is the Energy Regulatory Commission (ERC). The unit of analysis was top and middle managers. The study purposely sampled only the top managers and middle managers since they are the key individuals handling the strategic issues within the departments. This study utilized primary data. Primary data was obtained using self-administered questionnaires. Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS).

The intervening model sought to identify and explain the mechanism or process that underlies an observed relationship between an independent variable and a dependent variable via the inclusion of a third hypothetical variable, known as a intervening variable The mediating effect was tested

using a four step approach as suggested by Baron and Kenny (1986) where regression analysis are conducted and the significance of coefficients is tested at each step.

Step 1: A Regression analysis with IPP predicting SCP

$$SCP = \beta_0 + \beta_1 IPP + \varepsilon$$

Step 2: A Regression analysis with IPP predicting PFM

$$PFM = \beta_0 + \beta_1 IPP + \varepsilon$$

Step 3: A Regression analysis with PFM Predicting SCP

$$SCP = \beta_0 + \beta_1 PFM + \varepsilon$$

Step 4: A Regression analyses with IPP and PFM Predicting SCP

$$SCP = \beta_0 + \beta_1 IPP + \beta_2 PFM + \varepsilon$$

Where:

SCP = Supply Chain Performance

IPP = Composite of international sourcing, international supplier evaluation and selection, contract administration and monitoring practices and ethical procurement practices

PFM = Planning Function of Management

β_0 = Constant

$\beta_1 \ldots \beta_2$ =Beta coefficients

ε = Error term

Steps 1-3 was used to establish that zero-order relationship existed among the variables. Situations where one or more of the relations is non – significant depicts no possibility of mediation (Baron & Kenny, 1986). If they are significant relationships from step 1 through 3, one proceeds to step 4 where mediation is supported if the effect of IPP remains significant after controlling PFM. If PFM is not significant when IPP is controlled, there is full mediation, and if both IPP and PFM significantly predict SCP, there is partial mediation.

4.0 Results and Findings

4.1 Descriptive Statistics

4.1.1 Descriptive Statistics for International Procurement Practices

The objective of the study was to establish the relationship between international procurement practices and supply chain performance. The mean showed the average values, the mode showed the most common value and the median indicated the middle number in set numbers. The results are as depicted in Table 1.

Table 1: Descriptive Statistics for International Procurement Practices

Measure	International Sourcing	International Supplier Evaluation & Selection	Contract Administration and Monitoring Practices	Ethical Procurement Practices	Supplier Relationship Management
N	132	132	132	132	132
Mean	3.081	3.117	3.154	3.067	3.0706
Median	3.200	3.100	3.150	3.150	3.555
Mode	2.100	3.000	3.000	3.000	3.660
Std. Deviation	1.100	1.195	1.145	1.157	0.810
Skewness	-0.200	-0.043	-0.228	-0.251	-0.473
Std. Error of Skewness	0.211	0.211	0.211	0.211	0.211
Kurtosis	-0.898	-1.214	-0.930	-1.143	-1.414
Std. Error of Kurtosis	0.419	0.419	0.419	0.419	0.419

The results from the Table 1 shows the descriptive statistics that indicates central tendency and dispersion of all the measures of international procurement practices. The total number of respondents measured was 132. Distribution of data was measured using skewness and kurtosis whereas central tenancy was measured using mean, median and mode. The standard deviation was used to measure dispersion. The results show that international sourcing had a mean of 3.081, median of 3.200 and mode of 2.100. The standard deviation of 1.100 showed that the members of the group differed from the mean value of 3.081 for the group in the observation.

The measures of kurtosis and skewness are used to determine if indicators met normality assumptions (Kline, 2005). According to Bai and Ng (2005), if skewness is less than -1 or greater than 1, the distribution is highly skewed, if skewness is between -1 and -0.5 or between 0.5 and 1, the distribution is moderately skewed, if skewness is between -0.5 and 0.5, the distribution is approximately symmetric. Skewness for international sourcing was -0.200. Since the values were between -0.5 and 0.5, we thus conclude that the distribution is approximately symmetric. Kurtosis results showed that leadership style had -0.898. Thus, we can conclude that the values were platykurtic since they are less than 3 and thus had a broad tail distribution and no outliers.

The results show that international supplier evaluation and selection had a mean of 3.117, median of 3.100 and mode of 3.000. The standard deviation of 1.195 showed that the members of the group differed from the mean value of 3.117 for the group in the observation. Skewness for international supplier evaluation and selection was -0.043. Since the values were between -0.5 and 0.5, we thus conclude that the distribution is approximately symmetric. Kurtosis results showed that international supplier evaluation and selection had -1.214. Thus, we can conclude that the

values were platykurtic since they are less than 3 and thus had a broad tail distribution and no outliers.

The results showed that contract administration and monitoring practices had a mean of 3.154, median of 3.150 and mode of 3.000. The standard deviation of 1.145 showed that the members of the group differed from the mean value of 3.154 for the group in the observation. Skewness for contract administration and monitoring practices was -0.228. Since the values were between -0.5 and 0.5, we thus conclude that the distribution is approximately symmetric. Kurtosis results showed that contract administration and monitoring practices had -0.930. Thus, we can conclude that the values were platykurtic since they are less than 3 and thus had a broad tail distribution and no outliers.

The results showed that ethical procurement practices had a mean of 3.067, median of 3.150 and mode of 3.000. The standard deviation of 1.157 showed that the members of the group differed from the mean value of 3.154 for the group in the observation. Skewness for contract administration and monitoring practices was -0.251. Since the values were between -0.5 and 0.5, we thus conclude that the distribution is approximately symmetric. Kurtosis results showed that ethical procurement practices had -1.143. Thus, we can conclude that the values were platykurtic since they are less than 3 and thus had a broad tail distribution and no outliers.

The results showed that supplier relationship management had a mean of 3.0706, median of 3.555 and mode of 3.660. The standard deviation of 0.810 showed that the members of the group differed from the mean value of 3.0706 for the group in the observation. Skewness for contract administration and monitoring practices was -0.473. Since the values were between -0.5 and 0.5, we thus conclude that the distribution is approximately symmetric. Kurtosis results showed that supplier relationship management had -1.414. Thus, we can conclude that the values were platykurtic since they are less than 3 and thus had a broad tail distribution and no outliers.

4.1.2 Descriptive Statistics for Planning Function of Management

The objective of the study was to determine the intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya. Descriptive statistics were carried out on planning function of management and the results are shown in Table 2.

Table 2: Descriptive Statistics for Planning Function of Management

Measure	Planning Function of Management
N	132
Mean	2.927
Median	3.200
Mode	4.800
Std. Deviation	1.326
Skewness	0.061
Std. Error of Skewness	0.211
Kurtosis	-1.546
Std. Error of Kurtosis	0.419

The results from the Table 3 shows the descriptive statistics for planning function of management. The total number of respondents measured was 132. Distribution of data was measured using skewness and kurtosis whereas central tenancy was measured using mean, median and mode. The standard deviation was used to measure dispersion. The results show that planning function of management had a mean of 2.927, median of 3.200 and mode of 4.800. The standard deviation of 1.326 showed that the members of the group differed from the mean value of 2.927 for the group in the observation. The standard deviation of 1.326 further implies that the data points tend to be very close to the mean of the data and a high standard deviation implies that the data points are spread over a wide range of the values.

Skewness for planning function of management was 0.061. Since the values were between -0.5 and 0.5, we thus conclude that the distribution is approximately symmetric. Kurtosis results showed that planning function of management had -1.546. Thus, we can conclude that the values were platykurtic since they are less than 3 and thus had a broad tail distribution and no outliers. Planning function of management was evenly distributed and the measure between the high and low score was small and exhibits normality in planning function of management.

4.1.3 Descriptive Statistics for Supply Chain Performance

Descriptive statistics were carried out on supply chain performance and the results are shown in Table 3.

Table 3: Descriptive Statistics for Supply Chain Performance

Measure	Supply Chain Performance
N	132
Mean	3.470
Median	3.500
Mode	3.500
Std. Deviation	0.402
Skewness	0.177
Std. Error of Skewness	0.211
Kurtosis	-0.169
Std. Error of Kurtosis	0.419

The results from the Table 3 shows the descriptive statistics for supply chain performance. The total number of respondents in each measured was 132. Distribution of data was measured using skewness and kurtosis whereas central tenancy was measured using mean, median and mode. The standard deviation was used to measure dispersion. The results show that supply chain performance had a mean of 3.470, median of 3.500 and mode of 3.500. The standard deviation of 0.402 showed that the members of the group differed from the mean value of 3.470 for the group in the observation. The standard deviation of 0.402 further implies that the data points tend to be very close to the mean of the data and a high standard deviation implies that the data points are spread over a wide range of the values.

Skewness for supply chain performance was 0.177. Since the values were between -0.5 and 0.5, we thus conclude that the distribution is approximately symmetric. Kurtosis results showed that supply chain performance had -0.169. Thus, we can conclude that the values were platykurtic since they are less than 3 and thus had a broad tail distribution and no outliers. Sustainability was evenly

distributed and the measure between the high and low score was small and exhibits normal supply chain performance.

4.2 Correlation Analysis

Table 5 below presents the results of the correlation analysis.

Table 4: Correlation Matrix

Variables		Supply Chain Performance	International Procurement Practices	Planning function
Supply Chain Performance	Pearson Correlation	1.000		
	Sig. (2-tailed)			
International Procurement Practices	Pearson Correlation	.739**	1.000	
	Sig. (2-tailed)	0.000		
Planning function of Management	Pearson Correlation	.730**	.515**	1.000
	Sig. (2-tailed)	0.000	0.000	

The results in Table 5 indicated that international procurement practices was positively and significantly associated to supply chain performance (r= 0.739, p=0.00<0.05). Planning function of management was positively and significantly associated to supply chain performance (r=0.730, p=0.00<0.05). This was an indication that international procurement practices and planning function of management portrayed a strong connection with and supply chain performance.

4.3 Hypothesis Testing

The objective of the study was to determine the intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya. The second hypothesis stated in the null form is as follows:

H_{o2}: There is no significant intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya.

The intervening effect of regulatory framework was assessed and results explained using coefficient of determination (R-Square), Analysis of Variance (ANOVA) and the regression coefficients. The intervening effect of planning function of management on the relationship between international procurement practices and supply chain performance was further analyzed in 4 steps.

The multivariate model for mediation was guided by the following models:

i. $SCP=\beta0+\beta2IPP+\varepsilon$

ii. $PFM=\beta0+\beta3\ IPP+\varepsilon$

iii. $SCP=\beta0+\beta4\ PFM+\varepsilon$

iv. $SCP=\beta0+\beta5IPP+\beta6PFM+\varepsilon$

Steps 1-3 was used to establish that zero-order relationship existed among the variables. Situations where one or more of the relations is non – significant depicts no possibility of mediation (Baron & Kenny, 1986). If they are significant relationships from step 1 through 3, one proceeds to step 4 where mediation is supported if the effect of international procurement practices (IPP) remains significant after controlling planning function of management (PFM). If planning function of management (PFM) is not significant when international procurement practices (IPP) is controlled, there is full mediation, and if both international procurement practices and planning function of management significantly predict supply chain performance (SCP) there is partial mediation.

Table 5: R^2 for International Procurement Practices, Planning Function of Management and Supply Chain Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.739a	0.550	0.543	0.27171
2	.815a	0.664	0.661	0.77198
3	.730a	0.533	0.529	0.27567
4	.771a	0.595	0.589	0.25773

The results shows that the R squared for the mediating effect had varying values. The first step for regressing international procurement practices against supply chain performance had 55% while the second step of regressing international procurement practices against planning function of management had 66.4%. The third step which regressed planning function of management against supply chain performance had 53.3% and lastly the step that regressed international procurement practices, planning function of management against supply chain performance had 59.5%. The R squares for all the steps were above 50% and thus indicated a high level of variation between the variables.

Table 6: ANOVA for International Procurement Practices, Planning Function of Management and Supply Chain Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.559	1	11.559	156.565	0.000
	Residual	9.598	130	0.074		
	Total	21.157	131			
2	Regression	152.948	1	152.948	256.644	0.000
	Residual	77.474	130	0.596		
	Total	230.422	131			
3	Regression	11.277	1	11.277	148.396	0.000
	Residual	9.879	130	0.076		
	Total	21.157	131			
4	Regression	12.588	2	6.294	94.757	0.000
	Residual	8.569	129	0.066		
	Total	21.157	131			

The ANOVA results indicated that all the four models were significant at 0.000<0.05. The F-Statistic for model one was (F=156.565, p = 0.000<0.05), the F-Statistic for Model two was (F=256.644, p = 0.000<0.05), the F-Statistic for model three was F=148.396, p = 0.000<0.05 and the f-Statistic for model four was (F=94.757, p = 0.000<0.05).

The results for the regression of coefficients for international procurement practices, planning function of management and supply chain performance are as shown in Table 7.

Table 7: Regression Coefficients for International Procurement Practices, Planning Function of Management and Supply Chain Performance

Model		B	Std. Error	Beta	t	sig.
1	(Constant)	2.831	0.056		50.321	0.000
	International Procurement Practices	0.224	0.018	0.739	12.513	0.000
2	(Constant)	0.604	0.160		3.778	0.000
	International Procurement Practices	0.813	0.051	0.815	16.02	0.000
3	(Constant)	2.822	0.058		48.386	0.000
	Planning function of Management	0.221	0.018	0.730	12.182	0.000
4	(Constant)	2.761	0.056		49.121	0.000
	International Procurement Practices	0.130	0.029	0.429	4.442	0.000
	Planning function of Management	0.115	0.029	0.380	3.936	0.000

The regression of coefficients results shows that in step one, the regression model of supply chain performance on international procurement practices was significant with β=0.224, p=0.000<0.05) and supported by $T_{Calculated}$ =(1, 131)=12.513> $T_{Critical}$ (0.05, 131)= 1.658.

In step two, the results show that the regression model of international procurement practices on planning function of management was significant with β=0.813, p=0.000<0.05) and supported by $T_{Calculated}$ =(1, 131)= 16.02 > $T_{Critical}$ (0.05, 131)= 1.658.

In step three, the results show that the regression model of planning function of management on supply chain performance was significant with β=0.221, p=0.000) and supported by T Calculated =(1, 131)= 12.182 > T Critical (0.05, 131)= 1.658.

In step four, the results show that the regression model of international procurement practices and planning function of management on supply chain performance was significant with (β_1=0.130, p=0.000<0.05: β_2=0.115, p=0.000<0.05) and supported by $T_{Calculated}$ =(1, 131)= 4.442, 3.936 > $T_{Critical}$ (0.05, 131)= 1.658.

The fitted modes were:

SCP= 2.831+ 0.224IPP

PFM= 0.604 + 0.813IPP

SCP= 2.822+ 0.221PFM

SCP= 2.761+ 0.130IPP + 0.115PFM

Where;

SCP= Supply Chain Performance

IPP= International Procurement Practices

PFM= Planning function of Management

Thus step 1, 2 and 3 were met as the P-value were below 0.05. However, step 4 was not met as the p value for international procurement practices P_1=0.000<0.05 and P_2=0.000 were below 0.05. Therefore, this indicated that there exists a partial mediation effect on the mediating role of planning function of management on the relationship between international procurement practices and supply chain performance. The study thus, rejected the null hypothesis and adopted the alternative hypothesis that there is a partial intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya.

4.4 Discussions

The objective of the study was to determine the intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya. The intervening effect of regulatory framework was assessed and results explained using coefficient of determination (R-Square), Analysis of Variance (ANOVA) and the regression coefficients. The intervening effect of planning function of management on the relationship between international procurement practices and supply chain performance was further analyzed in 4 steps.

The results showed that the Rsquare for the mediating effect had varying values. The first step for regressing international procurement practices against supply chain performance had 55% while

the second step of regressing international procurement practices against planning function of management had 66.4%. The third step which regressed planning function of management against supply chain performance had 53.3% and lastly the step that regressed international procurement practices, planning function of management against supply chain performance had 59.5%. The Rsquares for all the steps were above 50% and thus indicated a high level of variation between the variables.

The ANOVA results indicated that all the four models were significant at 0.000<0.05. The F-Statistic for model one was (F=156.565, p = 0.000<0.05), the F-Statistic for Model two was (F=256.644, p = 0.000<0.05), the F-Statistic for model three was F=148.396, p = 0.000<0.05 and the f-Statistic for model four was (F=94.757, p = 0.000<0.05). The regression of coefficients results shows that in step one, the regression model of supply chain performance on international procurement practices was significant with β=0.224, p=0.000<0.05) and supported by $T_{Calculated}$ =(1, 131)=12.513> $T_{Critical}$ (0.05, 131)= 1.658. In step two, the results show that the regression model of international procurement practices on planning function of management was significant with β=0.813, p=0.000<0.05) and supported by $T_{Calculated}$ =(1, 131)= 16.02 > $T_{Critical}$ (0.05, 131)= 1.658.

In step three, the results show that the regression model of planning function of management on supply chain performance was significant with β=0.221, p=0.000) and supported by T Calculated =(1, 131)= 12.182 > T Critical (0.05, 131)= 1.658. In step four, the results show that the regression model of international procurement practices and planning function of management on supply chain performance was significant with (β_1=0.130, p=0.000<0.05: β_2=0.115, p=0.000<0.05) and supported by $T_{Calculated}$ =(1, 131)= 4.442, 3.936 > $T_{Critical}$ (0.05, 131)= 1.658. Thus step 1, 2 and 3 were met as the P-value were below 0.05. However, step 4 was not met as the p value for international procurement practices was below 0.05. Therefore, this indicated that there exists a partial mediation effect on the mediating role of planning function of management on the relationship between international procurement practices and supply chain performance. The study thus rejected the null hypothesis and adopted the alternative hypothesis that there is a significant intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya.

This agrees with Wei, Govindan, Li and Zhao (2015) who looked into the relationship between supply chain performance and the effective management strategies and found that the relationship between management strategies and supply chain performance was most significant in the following management dimensions: strategic, operational and business performance. Findings further illustrated that supply chain integration dimensions for instance, customer, supplier and internal integration are more strongly related to improving supply chain performance than management strategies that generally overlooked supplier integration.

The findings are also in line with Chen and Paulraj (2014) who conducted a research regarding supply chain management practices; they investigated long-term relationship, cross-functional teams, supplier base reduction, and supplier involvement using regression analysis. The study's findings indicated that supply chain management practices in form of strategic supplier partnership, customer relationship, and information sharing are critical in managing supply chains effectively. Knill (2010) found that for a supply chain to be managed properly and effectively, the intended distribution network is configured such that: the configuration involves the determination of the number of international warehouse facilities, transport facilities, clientele distribution, distribution centers and supplier network; distribution strategy of a supply chain must be monitored

in such a way that the distribution strategy maps how an organization intends to distribute its goods and services to its clients effectively and efficiently using global distribution networks.

Mamiro (2016), in his findings underscores these facts and concludes that one of the major setbacks in public procurement is poor procurement planning and management of the procurement process which include needs that are not well identified and estimated, unrealistic budgets and inadequacy of skills of procurement staff responsible for procurement. Similarly, Kakwezi and Nyeko (2010), argue that procurement performance is not usually measured in most Public entities as compared with the human resource and finance functions. They conclude in their findings that failure to establish performance of the procurement function can lead to irregular and biased decisions that have costly consequences to any public procuring entity. Procurement planning is the primary function that sets the stage for subsequent procurement activities; it fuels and then ignites the engine of the procurement process. It is the process of determining the procurement needs of an entity, their funding and timing of their acquisition such that operations are met as required in an efficient manner (Arrowsmith 2013).

Procurement must take a thoroughly professional view of its role in business as a whole and that must include planning (Bailey, Farmer, Jessop & Jones, 2018). Any such procurement begins with the planning decision to make the purchase and this will involve in the first place, deciding whether there is a need for the particular goods or services, ensuring that the purchaser has the legal powers to undertake the transaction, obtaining any relevant approvals within the government hierarchy and arranging the necessary funding. Nyeko (2014), in his studies on procurement processes and performance: efficiency and effectiveness of the procurement function, however, argues that procurement performance is not usually measured in most PEs as compared with the human resource and finance functions. He asserts that failure to establish performance of the procurement function can lead to irregular and biased decisions that have costly consequences to any public procuring entity.

Rotich (2011), in his studies on Influence of Planning on Procurement Performance in the Kenya Public Financial Sector, contends that the evaluation or measurement of procurement performance has always been a vexing problem for procurement professionals. He asserts that traditionally, firms concentrate on analyzing their own internal trends, which does not portray the true picture on how they compare well with competitors. Whereas the above studies dwelled on procurement processes, public reforms and the influence of planning, none of them addressed on performance indicators to gauge whether institutions have complied with the established procurement plans in delivering service to the public. This is what this research study seeks to achieve, as well as to recommend performance indicators in which public corporations can establish in order to guarantee effective service delivery improvement.

Lynch (2016) asserted that procurement planning is important because; it helps to decide what to buy, when and from what sources; it allows planners to determine if expectations are realistic; particularly the expectations of the requesting entities, which usually expect their requirements met on short notice and over a shorter period than the application of the corresponding procurement method allows; it is an opportunity for all stakeholders involved in the processes to meet in order to discuss particular procurement requirements; it permits the creation of a procurement strategy for procuring each requirement that will be included in the procurement plan; planners can estimate the time required to complete the procurement process and award contract for each requirement; the need for technical expertise to develop technical specifications and/or scope of work for certain requirements can be assessed, especially where in-house technical capacity is not available or is

non-existent and planners can assess feasibility of combining or dividing procurement requirements into different contract packages.

Onyango (2014) findings revealed that there was a significant statistical relationship between procurement planning and performance. Procurement plans therefore influenced procurement performance in the sense that they provide focused and efficient utilization of available resources, help in budgeting and planning and therefore with adequate provision of funds due to procurement plans, performance was assured. Lack of proper planning through effective identification of user needs in an organization creates an avenue of unethical practices in procurement department such as corruption and improper use of resources, excess budget votes therefore integration of procurement planning into budgetary process is important in an institutional framework.

5.0 Conclusions

The study concluded that there is a significant intervening effect of planning function of management in the relationship between international procurement practices and supply chain performance of energy development agencies in Kenya. The study also found that from the responses, the agencies had adopted well laid out strategic plans that are well planned and management organizes all the required resources for optimal supply chain performance. The management had stipulated a clear vision, mission and strategic goals and is effective in directing the agency towards achieving its vision and mission. The study found that the agencies has effective monitoring and evaluation tools that assist management in planning the organization's resources and the planning function of management influence supply chain performance.

6.0 Recommendations

The study also recommended that measures should be put in place to ensure that only exact quantities of materials are procured and in a way that minimizes their overall cost of supply chain. Effective use of e-procurement technologies should be highly encouraged to achieve this. To improve the supply chain performance more, the study recommended that the supply chain managers should be holding regular supplier appraisals and meetings so as to know the areas of improvement on the part of the suppliers. Specific e-procurement implementation key performance indicators should also be defined and closely monitored since this will lead to improvement in supply chain performance.

The study further recommended that all the state corporations should work tirelessly to incorporate supplier diversity in their supply chain process so as to improve their supply chain performance and closely monitor its implementation for better procurement performance. To bring the minority owned businesses on board, the state corporations in Kenya should create awareness of the government's preference schemes. Enhancing supplier diversity through supplier diversity programmes, and committing to strengthening strategic partnerships with minority owned businesses were perceived to play a big role in enhancing supply chain performance and therefore the state corporations should ensure that this is achieved.

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